

Notes on Zoophytes and Sponges obtained by Mr. F. Day off the East Coast of Scotland. By STUART O. RIDLEY, M.A., F.L.S.

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SPECIMENS from two of the stations investigated by Mr. F. Day in the 'Triton' in 1882 were submitted to me for examination and report. These stations are :—1. (Dredge No. 2) Lat. $56^{\circ} 54' N.$, long. $0^{\circ} 33' W.$, or about the same latitude as Stonehaven (Kiuncardine); and 2. (Trawl No. 3) Lat. $57^{\circ} 7' N.$, long. $0^{\circ} 37' W.$, the latitude lying midway between Stonehaven and Aberdeen; the depth was 42 fathoms in the one case and 40 fathoms in the other, and the distance from shore considerable. Thus the ground which has contributed the specimens below noticed forms part of the great plateau of moderately deep water which surrounds Great Britain and occupies the greater part of the German Ocean, and of which the Dogger Bank and other banks are slightly elevated portions. Ground very near this was investigated by the German exploring expedition in the vessel 'Pommerania' in 1872-73*. That expedition crossed the North Sea diagonally from N.E. towards S.W., viz. from Bergen in Norway to opposite Peterhead, and then passed down the coast, at some little distance from it, and entered the Firth of Forth. The present dredgings represent perhaps somewhat more eastern localities. That expedition obtained, like the present one, comparatively few Polyzoa near this point, but, unlike it, a considerable number of species of Hydroids; of this latter group but one species is included in the material which I have examined. With the exception of the results of the German Government expedition just mentioned, and of some specimens (of *Hatichondria panicea*, Johnst.) from the Dogger Bank, now in the British Museum, nothing has been, so far as I am aware, hitherto known of the Spongia-fauna of the German Ocean at a distance from the land.

POLYZOA.

The German expedition obtained *Flustra foliacea* and *Gemellaria lorikulata* off Peterhead, but few between that place and the Firth. The only species which I have to mention are two.

* See 'Jahresbericht der Kommission zur wissenschaftlichen Untersuchung der deutschen Meere in Kiel.' Berlin, fol., 1875.

ALCYONIDIUM, GELATINOSUM, *Linné*. Two quite small specimens.

Hab. Station 2, 40 fathoms.

Distrib. North Atlantic and Arctic seas (common) and South Africa (*Oates*).

[ALCYONIDIUM PARASITICUM, *Fleming*? A convoluted mass of dark colour, containing a considerable amount of sand between the cells. I am doubtful whether this specimen should not be referred to the Tunicata. It is attached to a shell.

Hab. Station 1, 42 fathoms.]

ANTHOZOA.

ALCYONIUM DIGITATUM, *Linné*. Abundant at both the stations. Those from Trawl No. 3 include two large specimens and one small orange-coloured example; the rest, as well as those from Dredge No. 2, were dirty white. Those from the latter source were not large. The largest specimen has enclosed in its base what appears to be a large *Balanus*.

Hab. Stations 1 & 2, 40-42 fathoms. (Also obtained by 'Pommerania.')

Distrib. North Atlantic and North-Sea coasts, common.

HYDROZOA.

The German expedition obtained a considerable variety of Hydroids here. The only species I have to notice is

HYDRACTINIA ECHINATA, *Fleming*. A small colony covers a shell which is perhaps *Littorina littorea*.

Hab. Station 2, 40 fathoms.

Distrib. Firth of Forth (common, *Herdman* & *Leslie**) and northern seas.

SPONGIDA.

No Sponges were obtained by the 'Pommerania' in this neighbourhood.

AMPHILECTUS EDWARDI, *Bowerbank*.

Isodictya Edwardii, *Bowerbank*, *Mon. Brit. Spong.* ii. p. 325; iii. pl. lviii. figs. 15-18.

Isodictya gracilis?, *id. op. cit.* ii. p. 333; iii. pl. lviii. figs. 23-26.

Amphilectus gracilis, *Vosmaer*, pars, *Notes from the Royal Museum of the Netherlands*, ii. p. 111.

* "The Invertebrate Fauna of the Firth of Forth," *Proc. Roy. Phys. Soc. Edinb.* 1881.

This sponge was obtained by Dr. Bowerbank originally in a sessile coating form on *Tubularia* from Banff. The specimen for which he established the species *Isodictya gracilis* came from Lough Larne in Ireland, and is branched, with soft stem and branches and minutely hispid surface, resembling exactly in these points the present form. Judging, however, by the figures, its skeleton-spicule is somewhat shorter and stouter, and its flesh-spicule smaller than in *I. Edwardi*; so that its identity with that species, which is asserted by Vosmaer (*l. c.*), appears to me still to require proof. At the same time it is interesting to find, as we do in the case of the present specimens, an external identity with the erect specimen from Ireland and an identity in minute structure with the Scotch specimens. Some fragments, obtained among the Hebrides, are described by Mr. Norman (*Mon. Brit. Spong.* iv. p. 138) as "of massive form, and showing a tendency to branch, measuring from half to three quarters of an inch long." The present specimens differ somewhat from all these specimens: they represent at least two individuals, now more or less broken. The largest must have measured quite 100 millim. (4 inches) in height when perfect; it branches subdichotomously and seldom. The stem is narrow and subcylindrical, about 5 mm. by 3 mm. in diameter; the branches also are somewhat flattened except at the apices, where they measure about 2 mm. in diameter, whereas their maximum diameter at about the middle of their course is about 7 mm. The smaller specimen is strictly cylindrical, and ranges in diameter from 2 to 4 mm. The skeleton-spicules measure about .23 by .008 mm.; the flesh-spicules about .022 mm. in length.

Hab. Stations 1 & 2; 40 and 42 fathoms.

Distrib. Banff (*Bowerbank*); Hebrides (*Norman*); 1-50 fathoms.

SUBERITES FICUS, *Johnston* (? *Esper*).

Halichondria ficus, *Johnston*, *Brit. Spong.* p. 144, pl. xv. fig. 4.

Hymeniacion ficus, *Bowerbank*, *Mon. Brit. Spong.* ii. p. 206; iii. pl. xxxvi. figs. 10-17.

Suberites ficus, *Schmidt*, *Spong. Atl. Gebiet.* p. 76.

"Potato-sponge," *F. Day*, *Notes on the Line and Herring Fisheries*, p. 18.

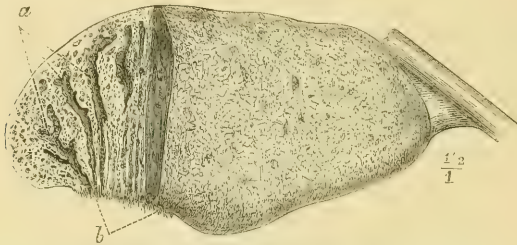
Several specimens, most of which exhibit the interesting and well-known commensalism of the Sponge with *Pagurus*, the sponge growing on, and apparently causing the absorption of, the shell, while the crab lives within it.

Although it is stated by Bowerbank and Johnston that the

vents ("oscula" of Bowerbank) are few and scattered (or absent altogether, *Johnston*), yet the only ficoid specimen in the present collection exhibits most distinctly a localization of these openings on the upper margin of the sponge, forming a linear series a little below its apex, in a slightly excavated depression or hilum; they measure $\cdot 5$ to 1 mm. in diameter, and are apparently twenty to thirty in number; their mouths are guarded and somewhat concealed by the projection of thin laminae of sponge-substance about 1 mm. in height, fringed with the skeleton-spicule. Dissection of the sponge shows that excretory canals converge towards and open by these orifices.

Hab. Stations 1 & 2; 40 and 42 fathoms.

Distrib. Northern, eastern, and western British and western Irish coasts; 1-50 fathoms (*Bowerbank* and *Norman*).



Suberites ficus, with the left side of the upper end removed, to show the efferent canals (*a*) and the spicular fringes (*b*) which surround their openings.

Results according to Stations.

Station 1.—Lat. $56^{\circ} 54'$ N., long. $0^{\circ} 33'$ W. 42 fathoms. Sandy and shelly bottom:—

Alcyonidium parasiticum? One specimen.

Alcyonium digitatum. Two moderate-sized white specimens.

Suberites ficus. Two small, on shells; one moderate-sized, free.

Amphilectus Edwardi. One specimen.

Station 2.—Lat. $57^{\circ} 7'$ N., long. $0^{\circ} 37'$ W. 40 fathoms. Sandy and shelly bottom:—

Alcyonidium gelatinosum. Two small, on shells.

Alcyonium digitatum. Two, large, massive and flattened, white; two smaller, white; one small, orange.

Hydractinia echinata. Covering *Littorina?* inhabited by *Pagurus*.

Suberites ficus. Two moderate-sized, on shells containing *Pagurus*. One smallish, compressed, on end of *Dentalium*.

Amphilectus Edwardi. Good-sized specimen.